BIOS

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Mackenzie Basin SOAE 2003

Canada's largest river basin, the Mackenzie Basin, reaches all the way from the Columbia Ice-fields in Alberta's Jasper National Park to the chilly shores of the Arctic Ocean. It is impressive in many ways as it:

- Includes Canada's longest river system, the mighty Mackenzie (4,241 km);
- Includes the largest lake lying entirely within Canada, Great Bear Lake;
- Is the tenth largest river basin on earth;
- Covers 1.8 million sq km, equalling about 20% of Canada's landmass; and
- Accounts for 60% of the freshwater flowing to the Arctic Ocean from Canada.

In July 1997, the Governments of Canada, British Columbia, Alberta, Saskatchewan, the Northwest Territories and Yukon signed the "*Mackenzie River Basin Transboundary Waters Master Agreement*". A Mackenzie River Basin Board was created as a forum for cooperative water management within the Basin. This Board is unique because of its interjurisdictional partnerships, the participation of Aboriginal members, and its focus on maintaining the ecological integrity of the whole basin.

The Board recently released its **Mackenzie River Basin State of the Aquatic Ecosystem Report 2003.** The Mackenzie River Basin is composed of six sub-basins: Athabasca, Peace, Liard, Peel, Great Slave and Mackenzie-Great Bear. The SOAE 2003 assesses each sub-basin based on five strategic goals:

- Improve water quality,
- Ensure sufficient water quantity,
- Sustain in-stream water uses,
- Ensure healthy, abundant and diverse aquatic species and habitat, and
- Ensure human health and safety.

The first section of the SOAE 2003 discusses the geography and major issues within the entire Mackenzie Basin. The information and assessment is described through four standard questions: 'What is happening?', 'Why is it happening?', 'What does it mean?', and 'What is being done about it?' These questions are followed by an 'Overall Assessment'. This format is repeated for each of the six sub-basins. This format reduces the repetition of information and focuses discussion on key issues within a geographic region. The report uses graphics and photos to complement the brief discussion. The result is a highly readable and informative assessment. The report also provides recommendations to improve the management of water resources and what must be done to improve any subsequent state of the aquatic environment reports.

The most encouraging finding of the Board's report is that aquatic ecosystems in the Mackenzie River Basin are generally healthy. However, the report raises several concerns about environmental trends, information gaps, and certain management practices that should be addressed to protect the basin's long term environ-

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BIOS is written for the enjoyment of the members of the Alberta Society of Professional Biologists and those interested in the field of professional biology. Articles or comments are welcomed and should be communicated to the ASPB Office. Editing and layout by Gavin More, 49 NORTH Creative Learning and Training.

WELCOME NEW MEMBERS

Regular Member:

Delaney Anderson, Dana Becker, Tracy Bell, Adam Croxall, Ryan Dodds, Elaine Irving, Shawn Johnston, Jamie Kvicala-Kolbeck, Joseph Litke, Charles Newyar, John Nishi, Michael Nishizaki, Darren Rath, Lindsay Sachro, Sherwin Shih, Stuart Taz, Ksenija Vujnovic, Jocelyn White, Darlene Wuenschel

Biologist in Training:

Partow Adachi, Erin Baird, Jean Francois Bouffard, Lisa Bridges, Ann Delyea, Alexis Fast, Shaye Folk, Lane Gelhorn, Carole Hachey, Katerina Makos, Kristopher Mask, David Stringer, Ryan Wonnacott

Student Member:

Chad Willms

Membership Update

ASPB membership as of October 1, 2004: **Total 560**

Regular	466	Biologist in Training	57
Honorary	7	Temporary Withdrawn	14
Student	8	Public Member	1
Associated	7		

Website Update

Alberta's Species at Risk program website is among the most extensive for any province or territory in Canada. It features information about natural history, status reports, research documents, the species at risk process, recovery planning, activities of the Endangered Species Conservation Committee, and opportunities for Albertans to get involved in the Species at Risk program.

Alberta's Species at Risk program website has been recently revised to incorporate updated information, including an expansion of the recovery section that provides information on the general species at risk recovery process. For example, new information on the site highlights progress in recovery planning and upcoming plans for species such as burrowing owl, Ord's kangaroo rat and trumpeter swan.

Visit the Alberta Species at Risk website at http://www3.gov.ab.ca/srd/fw/speciesatrisk/index.html

National EA Portal

For several years, Environment Canada has worked to bring forward the concept of improving information management, to streamline costs and encourage better dialogue among EA practitioners. In 2002, the Canadian Environmental Assessment Agency funded a study of EA practitioners.

One component was a "Sharing Good Practice Workshop", which gathered representatives of environmental non-government organizations, universities, industry, consulting firms, and federal, provincial/territorial and Aboriginal government agencies from across Canada. The workshop participants provided advice on information requirements and options for improving information management.

The major conclusions of the workshop were:

- EA practitioners often cannot access best available expertise for project assessments;
- Failure to access best information results in serious costs to the environment, to the EA process, and to proponents and other stakeholders;
- Better management of information for EA is needed to improve the practice and underlying science of EA; and
- An Internet-based EA portal is required, featuring basic geospatial data, land use and planning data, and links to other information sources.

Many organizations have expressed the desire to have "tools" available to improve information management. With the advances in technology, Environment Canada is now in the process of creating one of these tools and with partnerships and collaborative relationships in place, they are in a position to move forward.

In 2004, GeoConnections - a national partnership initiative working to build the Canadian Geospatial Data Infrastructure which is making Canada's geospatial databases, tools and services readily accessible on line (www.geoconnections.org) - approved funding for the initial phase of the National EA Portal 2004/05.

An overview of various groups and activities related to a National EA Portal can be found at www.ceaa-acee.gc.ca/015/0002/0018/7_e.htm

As part of the current work on a National EA Portal, Environment Canada has contracted the Miistakis Institute at the University of Calgary and others to develop the Portal. The first phase started this summer.

An advisory board of experienced environmental assessment practitioners is assisting with this endeavour. However, the intent is to receive as many ideas and feedback as possible during the development of the National EA Portal. To assist in this, an intranet website has been set up to deliver the latest news on the National EA Portal Initiative. The initial documents include the 2002 workshop, the National EA Portal proposal, performance evaluation, Information Architecture Story Boards, and minutes of advisory board conference calls for the Portal. Interested individuals can participate in a threaded discussion board for each document. To read or download documents on the intranet visit www.eaportal.ca/intranet.

To take part in the National EA Portal discussion forum simply register your name and email address to receive a login id. Once you have the login id, you can follow and participate in a threaded discussion group on each item posted.

Woodland Caribou - Grey ghosts of the boreal forest

A new report "Grey ghosts of the boreal forest" by the Canadian Parks and Wilderness Society (CPAWS) concludes that woodland caribou, a key indicator of a healthy boreal forest, require immediate protection if they are to survive. The report reviews the status of woodland caribou across Canada, and describes a new campaign to protect critical wild areas and to change industrial activities where woodland caribou live. Among the report's key findings:

- Of five major woodland caribou populations in Canada, one is endangered, two are threatened and one is of special concern.
- The Boreal population of Woodland Caribou was placed on COSEWIC (Committee on the Status of Endangered Wildlife in Canada) "threatened" species list in 2002.
- There are estimated to be 184,000 Woodland Caribou left in Canada, 54% of these are on the Island of Newfoundland.
- Woodland Caribou have been forced from 50% of their historic range within Canada.
- Woodland Caribou have been losing 35,000 km 2 of range every decade for the past 110 years.
- It is estimated that the population in Alberta will be extirpated in 37 years without action to protect their habitat. In Ontario it is estimated the same fate will meet woodland caribou in 100 years or less.
- The main cause of the woodland caribou decline is industrial development that: increases access of predators (wolves and humans); and reduces food sources (lichen in older forests) and habitat for giving birth.

A review of recent trends indicates that if steps are not taken now to protect many of the large intact regions where woodland caribou still roam, the species could disappear from much of its range this century. To download the report visit http://www.cpaws.org/news/caribourepport.pdf

Bios Bits

WAPPRIITA Conviction

On September 13, 2004, an Edmonton man pleaded guilty in Edmonton Provincial Court to four indictable counts of illegally exporting Asian Arowana (Scleropages formosus), an endangered freshwater fish species, from Canada into the United States. The illegal exportations constituted violations under Canada's Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRIITA). This legislation is used to meet Canada's international obligations to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Asian Arowana are an ancient fish, highly prized in the Asian culture as an emulation of the Dragon, and are a symbol of good luck and fortune. A total of 72 Asian Arowana were illegally exported from Canada. The fish, valued at between $1000 to $5000 CDN, occur in three different colors, and several different grades.

Fines totaled $30 000 for the four offences, and an additional fine of $30 000 was also imposed for recovery of benefits accrued through these offences as provided in the WAPPRIITA legislation. A significant portion of the damages will be donated to the Calgary Zoo in support of their planned conservation and endangered species exhibit through the Environmental Damages Fund.

SFM Network Final Project Reports

Established in 1995, the Sustainable Forest Management Network (SFM Network) is an incorporated, non-profit Canadian research Network of Centres of Excellence, based at the University of Alberta, in Edmonton, Alberta, Canada. The SFM Network supports university-based research and innovation that is relevant and necessary to sustain Canada's forests and forestry-dependent communities.

Reports produced by researchers are released to the public one year after their initial publication. The SFM Network website has a growing number of reports available as downloadable pdfs on a variety of themes. Current reports are listed along with their scheduled public release date.

One of the most recent examples is "Land use intensity and forest cover change: effects on the community composition of birds in the boreal forest" by Susan Hannon of the University of Alberta. Dr. Hannon's research objective is to understand the relationship between land use intensity/land cover change and biodiversity changes in the boreal forest and to develop indicators of these for biodiversity monitoring. This report describes a number of studies underway and provides interim research results.

To view this and other reports and for a list and description of current research studies underway visit http://sfm-1.biology.ualberta.ca/english/home/

Species At Risk Change Notice

The Species at Risk Act received Royal Assent in December 2002. The majority of the provisions of the Act came into force in June 2003; the prohibitions and enforcement provisions entered into force in June 2004.

At the time of Royal Assent, 233 species were included on Schedule 1, the List of Wildlife Species at Risk. The Minister of the Environment is now recommending that 76 species be added to Schedule 1. This recommendation is based on scientific assessments by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and on consultations with Canadian governments, Aboriginal peoples, stakeholders, and the Canadian public.

On October 18, 2004, notice was given that the Governor in Council, pursuant to section 27 of the Species at Risk Act, proposes to make the annexed Order Amending Schedules 1 to 3 to the Species at Risk Act.

Visit the SARA website at www.sararegistry.gc.ca/default_e.cfm to read the notice. You may make representations to the Director General, Canadian Wildlife Service, Environment Canada, Ottawa, Ontario K1A 0H3 concerning the proposed amendment within 30 days after the date of publication of this notice citing the Canada Gazette Part I, and the notice date of publication.

Advisory Committee on Water Use Practice and Policy

The Alberta Advisory Committee on Water Use Practice and Policy, established to examine the use of water for underground injection including the enhanced recovery of oil (oilfield injection), has issued it's final recommendations report.

The recommendations include strengthening the regulatory process for assessing applications that use non-saline water for underground injection, reviewing existing water licences for these purposes, improving provincial groundwater information and investing in research for alternative enhanced recovery technologies.

To view all documents visit www.waterforlife.gov.ab.ca/html/removed.html#report

Mackenzie Gas Project

On October 7, 2004, the proponents of the Mackenzie Gas Project [composed of Imperial Oil Resources, ConocoPhillips Canada, Shell Canada, ExxonMobil Canada and the Aboriginal Pipeline Group] submitted the following applications to the National Energy Board (NEB):

- development plan applications for the Niglintgak, Taglu and Parsons Lake gas anchor fields located in the Mackenzie Delta,
- an application for construction of the gathering pipelines and related facilities, and
- an application for a Certificate of Public Convenience and Necessity for a Mackenzie Valley gas pipeline.

Taglu is 100% held by Imperial Oil Resources Ventures Limited. About 10 to 15 new wells are planned at Taglu. They will be drilled from one central pad that has a drilling section and a gas-processing section. Drillling from one surface location will help preserve the permafrost and minimize disturbance to the land.

The Parsons Lake gas field is held 75% by ConocoPhillips and 25% by ExxonMobil. The Parsons Lake field has two main development areas: North Pad and South Pad. A number of wells will need to be drilled to produce the natural gas from Parsons Lake. The wells will be drilled directionally from the North and South Pads to lessen the amount of land disturbed.

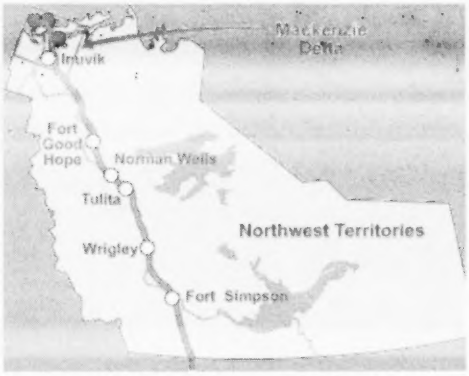
Niglintgak is held 100% by Shell. Approxiately six to eight wells will be needed to produce the gas. Since the reservoir containing the natural gas is shallow and has compartments, more than one drilling location will be needed to maximize gas recovery. To create as little disturbance as possible to the land, these wells will be drilled from two or three well pads close to the existing exploration well locations.

These applications are supported by the Environmental Impact Statement (EIS), which assesses the potential socio-economic and environmental impact of all components of the proposed development.

The project will include:

- developing the estimated 165 Gm3 (six trillion cubic feet) of natural gas resource in the three anchor fields, Niglintgak, Taglu and Parsons Lake in the Mackenzie Delta
- constructing gathering pipelines and associated facilities
- constructing a gas pipeline from Inuvik, along the Mackenzie Valley to northwestern Alberta

The gathering system will collect natural gas and associated natural gas liquids (NGLs) from the three fields and transport them to a facility in the Inuvik area. The gathering system will include:



- gathering pipelines, consisting of four sections, ranging in size from NPS 16 to NPS 30, totalling about 175 km of pipe.
- the Inuvik area facility, built to separate the gas and NGLs, and to compress, pump and cool the gas and NGLs. The facility will be located about 20 km east of Inuvik.
- a buried, NPS 10 NGL pipeline, about 475 km long, built from the Inuvik area facility to Norman Wells. The NGL pipeline will be built in the same right-of-way as the Mackenzie Valley pipeline. At Norman Wells, it will connect to the existing Enbridge oil pipeline.

Included in the scope of the project is the Alberta connecting pipelines facilities to be built by NOVA Gas Transmission Limited (NGTL) pipeline starting approximately 15 metres south of the Northwest Territories-Alberta border. The Alberta proposed facilities consist of an approximate 65 km extension of the Northwest Mainline (Dickins Section) from NGTL's existing Bootis Hill junction to the interconnect facilities and an approximate 35 km loop (Vardie River Section) of the existing Northwest Mainline between the Bootis Hill Junction and the existing Thunder Creek Compressor Station.

The Environmental Impact Statement (EIS) was developed for the Mackenzie Gas Project over three years, using a community, issue-focused approach that incorporates the input of those communities likely to be affected by the project. This is in keeping with the direction provided by the various regulatory agencies that are responsible for assessing and regulating energy developments in the Northwest Territories.

The 8 volume EIS includes:

- an overview of the project, for the purpose of an environmental assessment
- a description of biophysical and socio-economic baseline conditions;
- an assessment of potential impacts organized according to key questions and developed with community input ;
- a description of mitigation measures to reduce adverse biophysical and socio-economic impacts, while enhancing beneficial effects to the communities of the Northwest Territories; and
- a summary of environmental management plans designed to reduce or manage adverse project effects.

The operator of each field will develop the anchor fields after individual approvals by the National Energy Board (NEB) have been received. The project proponents agreed to participate in a common EIS submission and review process. As a result, the EIS submis-

SOAE 2003 cont'd

Key Findings

• **Improved Knowledge** - Improved monitoring programs and compatible data systems are needed to support better water management decisions throughout the basin.

• **Traditional Ecological Knowledge** - Community based knowledge about the land and water was critical to the Board's research. Priority should be given to updating, infilling and integrating this information for future assessments.

• **External Sources of Pollution** - Airborne pollutants from far away sources are a threat to the quality of water and country foods.

• **Climate Change** - Climate change has brought a warming trend and altered precipitation across the basin, affecting river flows, lake levels, habitats, pollutant concentrations, and transportation routes and subsistence lifestyles.

• **Water Quality** - Overall, surface water quality is good and capable of supporting all the basin's native aquatic plants and animals.

• **Industrial Wastes** - Since the 1980s, the quality of treated effluent discharges from industries and communities has greatly improved. Remaining concerns include pulp mill loadings, oil sands tailings, abandoned uranium mines around Lake Athabasca, Yellowknife's underground arsenic storage sites, and abandoned metal mines in the NWT.

• **Groundwater** - There is very little information about groundwater in the Board's report. Yet, many basin residents rely on groundwater, making it a very important resource.

• **Source Water Protection** - Protecting drinking water sources is a high priority for all of the member jurisdictions.

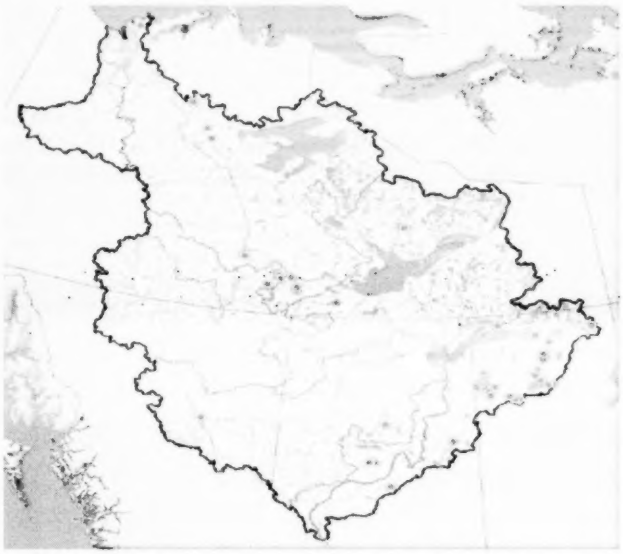
• **Country Food Safety** - Many basin residents consume local fish and waterfowl as part of their daily diet. Efforts to monitor contaminants, assess health risks, and distribute consumption advisories for such country foods vary widely across the basin.

• **Biodiversity** - The biodiversity of aquatic ecosystems in the basin appears to be good but the lack of adequate and reliable data makes this conclusion uncertain. Research-based water quality and quantity guidelines, designed to protect diverse, well-functioning aquatic ecosystems, are required to help assess the effect of increasing water withdrawals and effluent discharges.

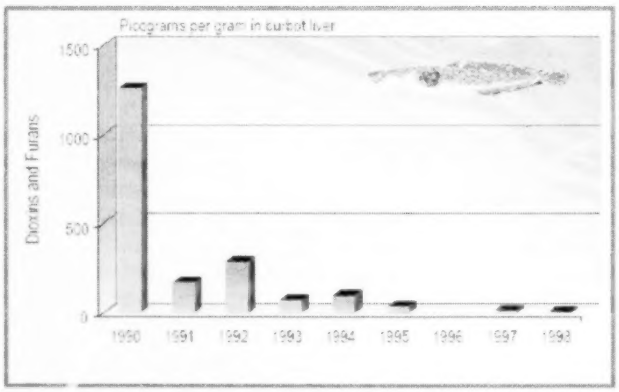
• **Peace-Athabasca, Slave and Mackenzie Deltas** - Traditional and scientific knowledge assessments agree that changes are occurring in the ecological health of the basin's three great river deltas - the Slave, Mackenzie, and Peace-Athabasca. Impacts from altered flow regimes and climate change are among the factors needing further research. These, in turn, should be used by respective jurisdictions to prepare comprehensive management plans for each delta.

Human Health Issues

Mercury, dioxins and furans are toxic chemicals that can harm people's health. Fish consumption advisories, designed to protect humans from consuming harmful levels of contaminants by limiting their consumption of highly contaminated fish are issued when contaminant levels in fish are high enough to warrant concern for the health of people who eat fish. By following fish consumption advisories, people can safely enjoy the health benefits of eating fish they have caught themselves.



Map showing the locations of high mercury level advisories in 2002 and 2003.



Concentrations of dioxins and furans in fish living near bleached kraft pulp mills declined substantially during the 1990s as illustrated by this graph of concentrations in livers of burbot downstream from a pulp mill on the Wapiti River, a tributary of the Peace River.

Tough Natural Resource Challenges Tackled

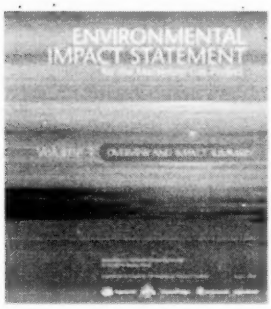
Significant challenges were tackled by Sustainable Resource Development in 2003-04. The ministry's annual report outlines actions it took to ensure that provincial public lands, forests, fish and wildlife resources continue to be managed sustainably.

Sustainable Resource Development 2003-04 annual report highlights:

- fighting more than 1,100 wildfires, as well as the evacuation of more than 3,000 Albertans during the Lost Creek and Fort McKay wildfires;
- working with partners to counter the spread of mountain pine beetles in the Bow Valley Corridor;
- responding to the West Nile virus threat through the wild bird surveillance program;
- increasing co-operation between leaseholders and people enjoying the outdoors through new access regulations under the Public Lands Act;
- responding to over 11,000 public complaints related to wildlife and ensuring public safety in more than 1,800 incidents involving direct human conflict;
- improving fisheries by continuing to reduce the number of commercial operators;
- the Natural Resources Conservation Board's 111 decisions regarding confined feeding operations;
- making communities safer by undertaking FireSmart initiatives with municipalities; and,
- completing the Bighorn Access Management Plan and establishing a committee to implement it.

The annual report is accessible online at www3.gov.ab.ca/srd/about/index.html

Mackenzie Gas Project cont'd



sion was prepared on behalf of the anchor field operators, the owners of the gathering system (including the natural gas liquid [NGL] pipeline), and the owners of the gas pipeline. To request an electronic (CD) or paper copy of the application documents, call (403) 237-3580.

A parallel regulatory review of the project relating to licensing and permitting is also required. The regulatory review will involve hearings conducted by the National Energy Board, the NWT Water Board, and the Mackenzie Valley Land and Water Board. Applications for permits to develop the project's infrastructure, such as construction camps, access roads, pipeline rights-of-way, storage areas and granular quarries, will be filed after the main applications. The permit applications will be filed with the relevant territorial regulatory boards and will also be available for public review.

A decision to construct the project has not been made. The final decision to proceed with construction will depend on obtaining the necessary regulatory approvals and assessing any conditions attached to those approvals, as well as several other factors, such as natural gas markets, project costs and fiscal terms.

Source: www.mackenziegasproject.com

SOAE 2003 concluded

mental quality.

A watershed approach to river basin planning and management is the best way to link land use practices with the health of aquatic ecosystems. The Board states it is pleased to see that every jurisdiction is moving in this direction and encourages all partners, industries and basin residents to support this integrated approach.

The Board will use the report to guide its own activities for the next four years. As a part of its on-going reporting cycle, it will again check the pulse of Canada's largest river basin in a second State of the Aquatic Ecosystem Report, to be produced in 2009.

For copies of the SOAE 2003 contact:

Mackenzie River Basin Board Secretariat
Box 1349
Fort Smith NT, X0E 0P0
Tel: (867) 872-2375 Fax: (867) 872-2385

The executive summary of the SOAE report can be found at the Board's website (www.mrbb.ca/reports.asp).

Husky Moves Osprey Nest

On September 2, 2004, an osprey nest on Husky's Tucker Oil Sands lease was moved to a new home. The nest, located on a power pole across the road from the site of the proposed central steam plant which will built in the spring of 2005. Drawn to the area because of the good fishing in nearby Tucker Lake, the nest has been home to two Osprey since at least 2001 when the first wildlife survey was conducted.

Original osprey nest site

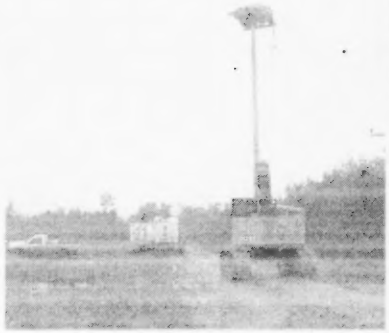
Close up of nest prior to the move

Concerns regarding the Osprey nest were raised during the stakeholder engagement process for the Tucker project. As a result, the company worked with regulatory agencies to find a new home for the nest. Several options were considered prior to moving the nest but in the end it was decided that it would be best to pick up the power pole and move it to a location away from the main construction site.

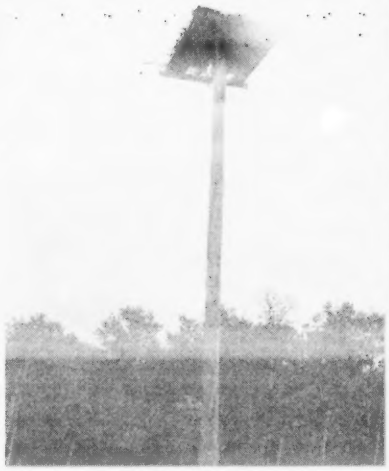
Husky's Carol Engstrom putting a tarp over the nest prior to moving the pole

The nest was moved 580 metres southeast to an old wellsite that will not be used for the project. Equipment used to move the nest included a crane, man lift, feller/buncher, tarp, rope, wood and a hydrovac. With the move now successfully completed, the trick will be to see if the Ospreys return next spring and like their new home! Husky will monitor the nest next spring to determine if the birds like their new neighbourhood. Husky will also install "osprey proof" power poles in the area to discourage Ospreys from building a nest on the new power poles when they are installed.

Crane placing pole in feller/buncher for move to new location



Nest transported by feller/buncher



Nest at new location

Carol Engstrom, P.Biol.